

Claims

1. A mutant of a biotin binding protein having improved properties compared to the wild type protein.
2. A mutant of a biotin binding protein of claim 1, wherein the protein is selected
5 from the group comprising chicken avidin, bacterial streptavidin, other poultry avidin, such as avidin protein from duck, goose, ostrich or turkey, and chicken avidin-related proteins (AVRs).
3. A mutant of a biotin binding protein of claim 2, wherein the mutant has inter-monomeric disulphide bridges in the tetramer.
- 10 4. A mutant of a biotin binding protein of claim 3, wherein the tetramer has one disulphide bridge between monomers 1-3 and one disulphide bridge between monomers 2-4.
5. A mutant of a biotin binding protein of claim 3, wherein the tetramer has two
15 disulphide bridges between monomers 1-4 and two disulphide bridges between monomers 2-3.
6. A mutant of a biotin binding protein of claim 3, wherein the tetramer has one disulphide bridge between monomers 1-3 and one disulphide bridge between monomers 2-4 and two disulphide bridges between monomers 1-4 and two disulphide bridges between monomers 2-3.
- 20 7. A mutant of a biotin binding protein of claim 4, wherein the amino acid residue 117 has been changed to cysteine.
8. A mutant of a biotin binding protein of claim 5, wherein the isoleucine residue 106 has been changed to cysteine and aspartate residue 86 has been changed to cysteine.
- 25 9. A mutant of a biotin binding protein of claim 6, wherein the amino acid residue 117 has been changed to cysteine, the isoleucine residue 106 has been changed to cysteine and aspartate residue 86 has been changed to cysteine.
10. A mutant of a biotin binding protein of claim 7, 8 or 9, wherein the protein is chicken avidin and the amino acid residue 117 is isoleucine.

11. A mutant of a biotin binding protein of claim 7, 8 or 9, wherein the protein is AVR1 or AVR2 and the amino acid residue 117 is asparagine.

12. A mutant of a biotin binding protein of claim 7, 8 or 9, wherein the protein is AVR3-7 and the amino acid residue 117 is tyrosine.

5 13. A mutant of biotin binding protein of claim 2, 11 or 12, wherein the protein is AVR1, AVR3, AVR6 or AVR7, wherein the cysteine 60 has been changed to any other amino acid.

10 14. A mutant of a biotin binding protein of claim 2, wherein the protein is chicken avidin, and the four intramonomeric disulphide bridges in the tetramer have been deleted.

15. Thermally stable AVR4/5.

16. A mutant of a biotin binding protein of claim 2, wherein the protein is an avidin related protein AVR4/5.

15 17. A mutant of a biotin binding protein of claim 16, wherein asparagine 43 of AVR4/5 has been changed to glutamic acid (AVR4/5(N43E)).

18. A mutant of a biotin binding protein of claim 16 or 17, wherein cysteine 124 in AVR4/5 has been changed to any amino acid.

20 19. A mutant of a biotin binding protein of claim 16 or 17, wherein cysteine 124 in AVR4/5 has been changed to any amino acid and tyrosine 117 has been changed to cysteine.

20. A mutant of a biotin binding protein of claim 18 or 19, wherein cysteine 124 in AVR4/5 has been changed to serine.

21. An isolated polynucleotide sequence encoding any of the mutants of claims 1 to 20.